Dirac operators and Hecke algebras

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Abstract

I will explain the construction and main properties of Dirac operators for representations of various Hecke-type algebras (e.g., Lusztigâs graded Hecke algebra for p-adic groups, Drinfeldâs Hecke algebras, rational Cherednik algebras). The approach is motivated by the classical Dirac operator which acts on sections of spinor bundles over Riemannian symmetric spaces, and by its algebraic version for Harish-Chandra modules of real reductive groups. The algebraic Dirac theory developed for these Hecke algebras turns out to lead to interesting applications: e.g., a Springer parameterisation of projective representations of finite Weyl groups (in terms of the geometry of the nilpotent cone of complex semisimple Lie algebras), spectral gaps for unitary representations of reductive p-adic groups, connections between the Calogero-Moser space and Kazhdan-Lusztig double cells.

Zoom: https://reuna.zoom.us/j/81334559341

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